

CLAIMS

What is claimed is:

1. A method for producing a foamed article, comprising the steps of:
providing an epoxy formulation, said epoxy formulation comprising an
epoxy resin, a blowing agent having a thermoplastic shell filled with a solvent core, and
5 a thixotropic filler;

providing an amine formulation, said amine formulation comprising an
amine and a thixotropic filler; and
10 combining said epoxy formulation and said amine formulation to form a
reactive mixture and allowing said thermoplastic shell filled with a solvent core to soften
from amine-epoxy exotherm and then expand due to gas pressure from said solvent
core.

2. The method for producing a foamed article recited in claim 1, wherein said
epoxy resin comprises from about 35% to about 99% by weight of said reactive mixture.

15 3. The method for producing a foamed article recited in claim 1, wherein said
epoxy resin and said thixotropic filler are combined prior to adding said blowing agent.

20 4. The method for producing a foamed article recited in claim 3, further
including the step of combining said blowing agent with an inert filler prior to combining
said blowing agent with said epoxy resin and said thixotropic filler.

25 5. The method for producing a foamed article recited in claim 1, wherein said
reactive mixture further includes an additive selected from the group consisting of
carbon black, ceramic microspheres, polymer particles, rubber particles, ceramic
particles, inert mineral particles and combinations thereof.

30 6. The method of producing a foamed article recited in claim 1, wherein said
reactive mixture is adapted for application upon portions of an automotive vehicle
selected from the group consisting of a rail member, a frame member, a door assembly,
a rocker, and a frame cross member.

7. The method of producing a foamed article recited in claim 1, wherein said
reactive mixture is adapted for application upon portions of an automotive vehicle

selected from the group consisting of a vehicle window frame, a vehicle deck lid, a lift gate, a vehicle pillar assembly, and a vehicle hatch.

8. The method of producing a foamed article recited in claim 1, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle roof system, a roof bow, a roof rail, and a roof header.

9. The method of producing a foamed article recited in claim 1, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a fender assembly, a bumper, and a front end structure.

10. A method for producing a foamed article, comprising the steps of:
15 providing an epoxy resin;
providing a thixotropic filler;
providing a blowing agent having a thermoplastic shell filled with a solvent core;
providing an amine formulation, said amine formulation comprising an amine and a thixotropic filler; and
20 combining said epoxy formulation and said amine formulation to form a reactive mixture and allowing said thermoplastic shell filled with a solvent core to soften from amine-epoxy exotherm and then expand due to gas pressure from said solvent core.

25 11. The method for producing a foamed article recited in claim 10, wherein said epoxy resin comprises from about 35% to about 99% by weight of said reactive mixture.

12. The method for producing a foamed article recited in claim 10, wherein 30 said epoxy resin and said thixotropic filler are combined prior to adding said blowing agent.

13. The method for producing a foamed article recited in claim 10, further including the step of combining said blowing agent with an inert filler prior to combining 35 said blowing agent with said epoxy resin and said thixotropic filler.

14. The method for producing a foamed article recited in claim 10, wherein said reactive mixture further includes an additive selected from the group consisting of carbon black, ceramic microspheres, polymer particles, rubber particles, ceramic particles, inert mineral particles and combinations thereof.

15. The method for producing a foamed article recited in claim 10, further comprising the steps of placing the reactive mixture in the cavity of an automotive vehicle.

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16. The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a rail member, a frame member, a door assembly, a rocker, and a frame cross member.

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17. The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle window frame, a vehicle deck lid, a lift gate, a vehicle pillar assembly, and a vehicle hatch.

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18. The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle roof system, a roof bow, a roof rail, and a roof header.

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19. The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a fender assembly, a bumper, and a front end structure.

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